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### ADENOCARCINOMA OF THE INTESTINE OF UNUSUAL GENERALIZATION AND WITH PECULIAR CYSTIC METASTASES.<sup>1</sup>

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THE following case is recorded because of the unusual generalization and appearance of the metastases in the intestinal tract, which had some resemblance to umatosis cystoides intestini or intestinal gaseous cysts of swine and man and also on account of the difficulty of exactly locating the primary lesion.

**CASE HISTORY.** The patient, a Chinaman, worked in a laundry and was well up to four months ago. He smokes opium to excess but does not use alcohol. Ten weeks ago he had a Neisser infection.

The present condition began about four months ago with indefinite pains in his left shoulder, abdomen, back and upper part of the thighs. Later the pain settled in the lumbar region and his abdomen began to swell. For two weeks before admission to the hospital he had a severe cough and expectorated a large amount of dirty, grayish sputum. He states that warm food agrees with him but that cold food causes pain in his stomach. Without medicine his bowels move only every third or fourth day.

<sup>1</sup> Under a grant of the Cooper Fund of Medical Research in McGill University.

On admission, December 18, 1917, pulse was 96, temperature 97° F. and respirations 18. He lies in dorsal decubitus with his knees flexed and has an anxious expression. Conjunctivæ and mucous membranes distinctly icteroid, skin dry and harsh, with very little subcutaneous tissue, and he has evidently lost weight. Examination of the respiratory system showed only harsh, vesicular breathing, with fine crackles over both the interseapular regions.

*Cardiovascular System.* Negative.

*Genito-urinary System.* No evidence of Neisser; frequency  $\frac{D4-5}{N.1.}$

*Urinalysis.* Amber; turbid; alkaline; specific gravity, 1024. No sugar or albumin; phosphates, carbonates and a few pus cells.

The abdomen is distended and tense, with slight tenderness around the umbilicus. The flanks bulge and are dull on percussion. On palpation an irregular mass can be felt lying transversely across the abdomen above the level of the umbilicus.

December 20 a laparotomy was done and about 1000 c.c. of straw-colored fluid were removed and a specimen was sent for examination. The intestines were found to be studded with nodules and the omentum was rolled up in a mass above the umbilicus. An enlarged, firm gland was removed for examination and the abdomen closed. (This gland was reported as being a metastasis of an adenocarcinoma. See below.)

Following the operation the patient rallied well at first, but later generalized jaundice appeared and he gradually lost weight and died January 21, 1918.

Autopsy was performed four hours after death: The skin shows a deep icteroid tint, the abdomen is markedly distended and contains a large amount of bile-stained fluid. The omentum is thickened, rolled up and extends transversely across the abdomen from the left upper quadrant to the right flank just below the level of the umbilicus. It is studded with numerous small, firm nodules and the lower border consists of a solid, irregular mass of growth. The liver is small, weighing 1280 gm.; the capsule is somewhat thickened and irregularly opaque. On section the cut surface is a dark olive-green color, with indistinct markings. There are several small areas which are yellow and apparently necrotic, with many small, dilated bile ducts in them. There is a stone about the size of a small walnut in the hepatic duct near the gall-bladder. The surrounding tissue is firm, white and partly fibrous. The hepatic ducts are markedly distended. There is a small nodular growth near the cystic duct the size of a small marble. A small pea-sized stone was found in the ampulla of Vater and the gall-bladder was filled with a milky mucoid fluid.

The alimentary tract is particularly interesting. The esophagus is free, the stomach shows several healed ulcers varying in size from a few millimeters to 3 cm. in diameter. Throughout the

intestine, however, there are numerous larger and smaller, sometimes solid, sometimes cystic tumor masses. These can be roughly divided into three classes:

1. Firm, nodular growths, which occur most frequently and are usually situated near or in the mesenteric attachment. They apparently lie immediately beneath the serous coat and appear as round masses with a flattened surface and varying in size from a few millimeters to 1 cm. or more. On section they are small solid masses of whitish-yellow tissue, occasionally with slight honeycombed appearance. Larger, irregular masses occur which seem to be of the same nature and possibly a fusion of several of these nodules. Such a mass occurs in the cecum near the ileocecal valve and in total bulk about the size of a small egg.

2. Beneath the mucous surface of the intestine small spherical masses can be seen which are soft to the touch and cystic, and also vary in size from a few millimeters to over 1 cm. On section they are filled with a thick mucoid material.

3. Several large cysts, projecting into the lumen of the gut, which appear to lie between the serosa and mucosa and covered only by these coats. They are of a bluish color, soft, fluctuating, appear and feel like large emphysematous bullae and are filled with a whitish, partly gelatinous, partly mucoid material. One of these is situated 57 cm. from the duodenal-jejunal flexure and is about the size of a sparrow egg, and from it sections were taken. Another, slightly smaller, was cut out without being opened and from it Dr. Brûère kindly made a bacteriological report. The largest cyst is situated in the dependent part of the cecum and corresponds in appearance to that already described, but is as big as an egg. In the transverse colon there is another slightly smaller but similar cyst.

The microscopic report on the snipping removed from the omental mass during the exploratory laparotomy on December 19 is as follows:

The sections show a fatty reticular tissue which has been invaded by an adenocarcinomatous growth, which is made up of larger and smaller cystically dilated acini. The smaller and apparently younger acini show a small lumen, a well-formed columnar epithelium sitting on a basement membrane and oval, deeply chromatic nuclei situated near the base. The largest alveoli are filled with a faintly staining, mucoid material. The lining epithelium is, for the most part, missing, or where present is of a low cuboidal type. Between these two extremes intermediate stages can be traced and in many of these glands the epithelium is evidently actively secreting a mucinous material. The tissue also shows a more or less generalized infiltration, with inflammatory cells, mostly of the polymorphonuclear type.

**DIAGNOSIS.** Metastases of an adenocarcinoma in omental tissue. Sections taken at autopsy from several of the nodules grouped above in Class I show a very uniform picture. The growth is most marked in the serosa, and, as in the case of the omental metastases, is made up of glandular loops, which show varying degrees of cystic dilatation, with progressive destruction of the lining columnar epithelium. The musculature has been invaded and destroyed, leaving only an occasional thin strand of muscle cells and the alveolar structures extend into the submucosa. The slight honeycombed appearance seen grossly is due to the largest of the dilated acini, which are of such a size as to be just visible to the naked eye. The mucous membrane is well defined from the growth, but is very thin and represented by irregular villous projections. The individual cells are in a rather advanced stage of necrosis and atrophy, evidently due to lack of nutrition and pressure.

In Class II the microscopic appearance is somewhat different. The metastatic cells evidently reached the submucosa and there found a suitable soil to grow on. The serosa and muscular coats are here intact and form the outer coats of the cystic mass. Immediately to the inner side of the musculature there is a cystic cavity which is filled with mucoid material. The epithelium has completely disappeared and the wall is formed by connective tissue. Between this cystic space and the mucous membrane the edematous remains of the submucosa can be seen, and in it are a few small, irregular, glandular loops. The mucosa itself is similar to that described in Class I.

The third series of sections are taken from the large emphysematous cysts. The cavity is the size of an egg and the wall is very thin, the contained mucoid material giving it a bluish appearance grossly. The cavity lies between the mucosa and the musculature, its inner surface devoid of epithelium and formed externally by the smooth musculature of the gut wall and the serosa and toward the lumen of the gut by fibrillar connective tissue covered by the remaining necrotic and atrophic mucous membrane.

One of these cysts was excised and examined bacteriologically, and Dr. Bruère isolated (1) a variant of *Bacillus communis*, which fermented lactose very slowly and feebly to acid and gas; (2) *Bacillus coli communis*, excretal type.

From the gross and microscopic examination it is evident that the lesion is a widespread metastasis from an adenocarcinomatous growth. The cell type, manner of growth and the character of its secretion all point to its derivation from the intestinal tract, but at the time of autopsy it had become so widespread and so uniform, except for the cystic changes, that the primary growth could not be identified. The metastases in the serosa are most typically adenomatous and, due to the greater resistance of the musculature and connective tissue, the cystic dilatation is well controlled; but

when the metastases reach the loose submucous tissue colloid or mucoid degeneration and distention are the marked feature and typically shown in the group of nodules in Class II. When we come to the four large cysts, which due to their unusual appearance led to this investigation, they are evidently an exaggeration of the mucoid degeneration seen in the second group, with complete destruction of the mucoid secreting epithelium. This can be pretty safely assumed because of the similarity of the cystic contents and the location of the lesion in the submucous coat.

Whether or not the cysts became infected with the gas-forming bacteria long enough before death to partly account for their large size it is impossible to say, but not unlikely. Therefore it appears that these large cysts which grossly were at first thought to be an independent lesion are only a peculiar manifestation of degenerative processes in the original carcinomatous metastases.

The distribution of the metastases is also interesting; they are confined to the gut, peritoneal glands, omentum and the hilus of the liver indicating a dissemination through the peritoneal lymphatics and in this way resembling some cases of tuberculosis.

I wish to express my thanks to Professor Oertel for his kind criticism.

#### **THE VALUE OF VENTRICULAR PUNCTURE FOR THE EARLY DIAGNOSIS AND SERUM TREATMENT OF POSTERIOR BASILAR MENINGITIS.**

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THE results obtained about a year ago in the treatment of two babies suffering from posterior basilar meningitis who were admitted to the Willard Parker Hospital are of sufficient interest to justify a short discussion of certain features of the disease and a detailed presentation of the clinical and laboratory reports of the cases. In the literature several late cases of posterior basilar meningitis are reported who recovered after ventricular punctures and injections of antimeningitis serum. No particular attention seems, however, to have been drawn in any of the communications to the importance of an early diagnosis before the progressive character of the symptoms had established the diagnosis beyond a doubt, at which time more or less damage to the brain tissue had already taken place.

The difficulty of recognizing the disease in its early stages, the late complication of an internal hydrocephalus and the resulting high